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I&T 100 YEARS OF LEADERSHIP 1886-1986

Implement & Tractor

The business magazine of the farm and industrial equipment industry MAY 1986

New Dealer Builds on Parts Marketing

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Reconstruction, Part III: What's Happened to Combines?

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I&T 100 YEARS OF LEADERSHIP 1886-1986

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May 1986 • Vol. 101 • No. 7

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Update

Retail Sales: Biz-as-Usual Returns

The February leap in retail sales of farm equipment, as reported by the Farm & Industrial Equipment Institute, was compensated for by a weak market performance in March. But tractors under 40 horsepower, mostly Japanese imports, continued their upward path.

The big jump in February sales of tractors has been attributed to one tractor company's program whereby dealers moved unretailed inventory into their own possession.

Unit Retail Sales

	March			January-March		
	1986	1985	Pct. Change	1986	1985	Pct. Change
Farm Wheel Tractors:						
2-wheel drive						
Under 40 hp	5,539	4,703	+17.8	11,167	9,352	+19.4
40-99 hp	2,002	3,298	−39.3	6,267	7,748	−19.1
100-139 hp	342	922	−62.9	1,368	2,160	−36.7
Over 140 hp	523	1,004	−47.9	2,433	2,689	− 9.5
Total 2-wheel drive	**8,406**	**9,927**	**−15.3**	**21,235**	**21,949**	**− 3.3**
4-wheel drive						
Under 200 hp	47	84	−44.0	165	215	−23.3
Over 200 hp	65	142	−54.2	349	362	− 3.6
Total 4-wheel drive	**112**	**226**	**−50.4**	**514**	**577**	**−10.9**
Total All Tractors	**8,518**	**10,153**	**−16.1**	**21,749**	**22,526**	**− 3.4**
S-P Combines	156	227	−31.3	1,013	1,140	−11.1
Balers (under 200-lb. bales)	275	469	−41.4	673	908	−25.9
Forage Harvesters (shear-bar type)	56	139	−59.7	178	309	−42.4
Mower-Conditioners	647	790	−18.1	1,302	1,462	−10.9

Canada's March Sales: Same Pattern as U.S.

After a February spurt in Canadian retail sales of tractors, March activity was down substantially in most product categories, according to the Canadian Farm & Industrial Equipment Institute.

Tractor sales in March of 1,031 were down 21 per cent from a year earlier; for the year to date, they were still up 9 per cent at 3,603 units. Under-40-hp units went up in March, but all other tractor horsepower categories were down.

Nebraska Alters Its Tractor Test Law

Nebraska's legislature has revised the state's law concerning tractor testing. From now on, any tractor which has been tested according to codes of the OECD (Organization for Economic Cooperation and Development) can be marketed in that state without having to be tested again.

The Farm & Industrial Equipment Institute, which is the designated authority for implementing the OECD test program in the U.S., has told the Dept. of Commerce it intends to implement the testing of tractors in the U.S. according to OECD codes. Engineers from member companies are scheduled to meet with Nebraska Test engineers to discuss the feasibility of the Nebraska Tractor Test Lab running or overseeing the tests and issuing OECD reports, according to the FIEI's newsletter.

Ready for Plastic, Throw-Away Balers?

A Canadian plastics manufacturer says his firm, PPD Technologies, has designed a plastic baler that will make about 10,000 bales before wearing out.

Kaji Koda, vice-president of PPD, was quoted in Canada's Western Producer farm paper as saying that the technology and market are at hand for disposable farm machinery. "I don't know how many farmers do 10,000 bales over three or four years. The product should retail for $3,500 (about $2,800 U.S.—Ed.). Frankly, for a part-time farmer, does he need more than 10,000 bales, can he afford any more than $3,500 and does he care?"

Other plastic items anticipated by Koda: Wheel rims ("If it can take the weight and can take the transport, does it matter what it's made of?"); graphite shafts; cultivator shanks; non-lubricant bearings.

Briefly...

Massey-Ferguson Ltd. has announced it will spend $31.5 million on its Coventry, U.K., tractor plant to improve production efficiency on its 200 series.

BAGMA, the British trade association of farm and garden equipment dealers, has named Bill Barrell as its new director general. He succeeds Jonathan Swift, who will manage a British hardware association.

Inventory Watch

What's happening to stockpiles in relation to sales.

	Inventory Levels							12-Month Sales,
Equipment	Feb. 28 1985	Sept. 30 1985	Oct. 31 1985	Nov. 30 1985	Dec. 31 1985	Jan. 31 1986	Feb. 28 1986	Mar. '85-Feb. '86
Tractors:								
Under 40 hp	43,356	40,319	41,153	44,086	46,559	51,537	56,446	58,193
40-99 hp	32,984	27,686	26,455	26,464	25,658	25,480	25,929	37,662
Over 100 hp	28,471	23,487	23,171	22,861	22,243	21,204	20,918	16,713
Four-wheel drive	4,778	3,811	3,601	2,889	2,889	2,719	2,623	2,963
Total Tractors	**109,589**	**95,303**	**94,380**	**96,811**	**97,349**	**100,940**	**105,916**	**115,531**
S-P Combines	9,002	8,969	8,353	7,249	6,685	6,373	6,342	8,355

Source: Farm & Industrial Equipment Institute

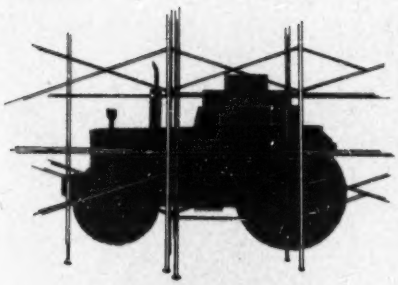
RETAIL SALES OF SELECTED FARM EQUIPMENT – Jan.-Dec., 1984 and 1985(1)

(In Units)

State	Combines Self-Propelled		Corn Heads		Hay Balers(2)		Windrowers Self-Propelled: Power Units		Windrowers Self-Propelled: Total Heads		Grinder-Mixers		Shear-Bar Forage Harvesters(3)		Mower Conditioners All Types	
	1984	1985	1984	1985	1984	1985	1984	1985	1984	1985	1984	1985	1984	1985	1984	1985
Alabama	89	59	23	24	101	86	.....	.....	.....	.....	41	41	12	11	91	88
Alaska	.....	.....	.....	.....	3	7	.....	.....	.....	.....	.....	.....	1	.....	3	5
Arizona	45	26	1	1	33	27	46	50	56	55	1	1	9	4	4	5
Arkansas	424	181	8	5	165	168	.....	.....	.....	.....	31	28	11	2	250	216
California	78	62	38	22	131	99	159	178	180	204	1	1	37	45	22	30
Colorado	121	109	47	34	258	229	112	103	123	120	12	12	23	21	85	110
Connecticut	.....	.....	.....	.....	37	26	.....	.....	.....	.....	1	1	31	19	60	48
Delaware	33	28	22	22	13	12	.....	1	.....	1	3	8	7	1	11	12
Florida	20	16	5	5	72	78	.....	1	–2	2	3	5	16	17	38	54
Georgia	238	149	111	78	133	136	1	.....	1	.....	44	39	31	27	150	125
Hawaii	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho	183	112	3	3	220	200	136	108	148	139	13	3	27	14	55	60
Illinois	1,424	1,086	1,297	1,062	236	143	4	3	6	3	140	129	103	49	417	325
Indiana	763	613	695	650	192	166	4	2	4	2	119	113	86	45	403	350
Iowa	982	635	1,115	640	171	80	22	15	23	16	288	180	105	46	517	252
Kansas	697	595	88	84	171	124	115	124	123	140	49	34	43	36	323	263
Kentucky	171	109	95	89	205	201	2	.....	2	.....	80	78	77	47	593	616
Louisiana	156	71	4	12	76	90	.....	.....	.....	.....	6	7	2	6	28	38
Maine	1	.....	.....	.....	53	53	2	2	2	2	.....	.....	20	28	86	71
Maryland	96	90	82	82	75	83	5	6	6	6	19	22	36	34	104	129
Massachusetts	.....	.....	.....	.....	37	27	.....	.....	.....	.....	.....	.....	24	28	58	68
Michigan	212	127	213	133	248	187	25	24	28	22	110	87	198	132	465	329
Minnesota	755	417	489	268	413	214	162	95	178	101	155	97	300	159	653	387
Mississippi	206	93	5	1	66	47	1	.....	1	.....	18	19	24	16	50	35
Missouri	444	397	141	157	298	255	22	11	16	12	118	71	44	29	879	628
Montana	191	120	.....	1	105	88	105	88	121	115	32	17	30	24	102	63
Nebraska	531	489	405	372	71	42	109	45	130	61	84	59	84	37	235	131
Nevada	1	1	.....	.....	28	26	26	31	30	37	2	2	2	10	8	14
New Hampshire	.....	.....	.....	.....	42	40	.....	.....	.....	.....	.....	1	20	15	57	57
New Jersey	11	6	4	8	29	32	1	.....	1	.....	9	3	6	4	50	43
New Mexico	11	23	1	2	151	124	38	50	40	52	2	2	3	6	24	35
New York	49	35	55	51	432	391	25	24	25	25	31	35	390	291	741	659
North Carolina	247	127	218	117	221	155	1	.....	1	.....	43	26	50	56	351	264
North Dakota	652	459	44	31	18	9	252	182	283	198	59	51	49	36	112	79
Ohio	466	438	391	369	340	307	11	11	11	11	145	118	131	100	613	646
Oklahoma	269	235	2	21	275	330	53	69	56	82	29	31	9	10	350	450
Oregon	77	85	8	8	167	159	65	94	74	115	2	6	28	21	78	95
Pennsylvania	112	95	107	101	539	468	31	26	31	26	132	147	266	206	842	717
Rhode Island	.....	.....	.....	.....	2	4	.....	.....	.....	.....	.....	.....	.....	.....	3	2
South Carolina	98	48	42	53	64	45	.....	1	.....	1	17	15	17	12	102	78
South Dakota	294	283	117	106	56	24	201	98	225	118	92	72	123	59	113	44
Tennessee	219	114	38	28	237	198	2	.....	2	.....	88	93	48	41	558	482
Texas	497	466	123	112	519	756	45	55	46	63	105	81	24	30	844	1,142
Utah	24	18	2	3	206	137	57	47	63	52	7	4	38	26	154	95
Vermont	.....	.....	2	....	55	58	4	6	4	7	1	.....	61	53	165	137
Virginia	92	72	68	51	167	141	2	1	2	1	47	39	105	69	545	485
Washington	157	141	16	12	210	167	53	61	64	57	1	–1	28	40	110	95
West Virginia	2	.....	3	.....	84	68	.....	.....	.....	.....	15	10	12	17	121	114
Wisconsin	259	161	283	198	787	461	133	66	132	71	150	117	737	474	1,400	1,018
Wyoming	25	20	8	.....	102	65	59	35	71	43	4	10	10	5	34	30
U.S. Government	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miscellaneous(4)	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	2	.....	24
TOTAL	**11,422**	**8,411**	**6,419**	**5,016**	**8,314**	**7,038**	**2,091**	**1,713**	**2,307**	**1,961**	**2,349**	**1,914**	**3,538**	**2,460**	**13,057**	**11,243**

Data released Feb. 4, 1986, Farm & Industrial Equipment Institute.

(1) Includes revisions for prior months.
(2) For making bales of under 200 lbs.
(3) Pull-type, mounted, self-propelled.
(4) Sales reported as miscellaneous are retail sales which cannot be classified by state or as U.S. Government. They include sales and dispositions that do not go through usual marketing channels such as gifts to non-profit organizations, intra-plant or company transfers, etc.



Reconstructing the Industry

The bubble was big, and it burst with a bang, leaving the sales of new combines in shambles. Yet crops are still being grown, and must be harvested. This third in an I&T series looks at how the combine builders are preparing for the future.

Part 3:

Where Have All the Combines Gone?

By Scott Nesbitt

■THE COMBINE business will never be the same, thanks to the six-year nose dive in sales and changes forced by the harsh realities of farm economics.

• Factories will get directly involved in sales to customers. Dealers will either become combine specialists or get out of the business.

• The emphasis will shift from selling new combines to providing harvesting equipment—meaning the factories will get into the used sales business.

• The era of "me too" machinery will fade, as manufacturers slide into niches created by new technologies adopted by farmers who change their operations to survive. The companies that can will tap their world-wide resources to bring in new technology at cut-rate prices.

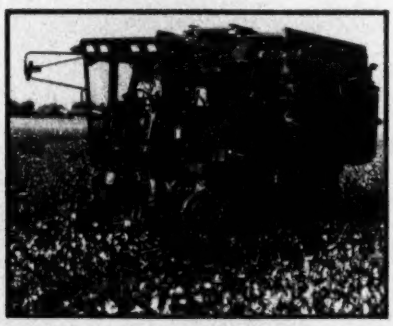
• Dealers who want to park a few combines on the front lot in late summer, just in case a customer walks in, might consider a new line of work. The manufacturers won't again get trapped by dead inventory, and changes in factories mean they won't have to.

These changes are a response to the crash of new combine sales—from 32,246 in 1979 down to a mere 8,402 in 1985 on the U.S. market. Canadian sales also slowed, though not as badly.

To get a handle on how the combine builders are restructuring to face the changed market, I&T talked to executives from each of the companies to prepare this report. We found a bit of the possible future in Wichita, Kan.

A Gallery of Changes

Introduced in early 1985 as the White model 9320, this Class 5 combine is now the Massey Combines Corp. model 8560.



Many pieces from tractors, planters and combines were used to create Case-IH's model 1822 two-row cotton picker.

Beside the new Deutz-Allis name, the Gleaner rotary combines get a new straw spreader to meet farmers' needs, and a new R series designation.

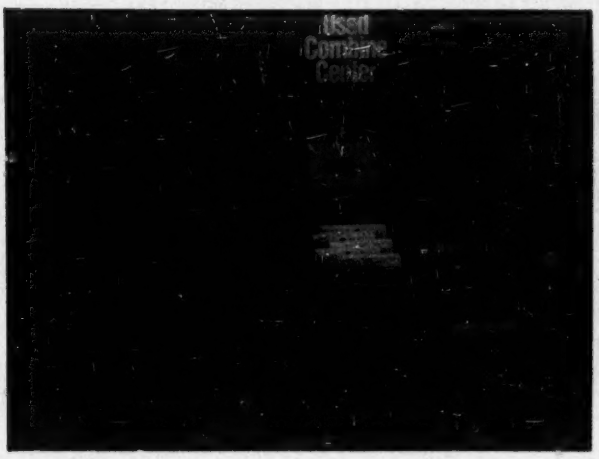
Bucking an old tradition, the new Deere 4425 combine comes in from Germany.

Used combine supermarket

When Massey-Ferguson spun off the Massey Combines Corp., retain-

Since New Combines Aren't Selling...

Massey Combine Corp. opened a used combine center in Wichita, Kan. Literature on the rack describes each machine, and the remodeled showroom has a lounge for browsers. Salesmen wait for customers to ask for help. The stock includes newer machines and old goodies like the M-F 410, last built in 1972. Each combine includes an 87-point inspection report and list of repairs done and those needed; many are given a warranty. If the pilot project works, the concept will be expanded to other states.



ing only 40 per cent ownership, the big question was, "If they lost money as part of Massey, how the heck are they going to make money out on their own?"

Part of the answer lies on the southwest side of Wichita, Kan., where the company-owned MF dealership has become what's called the world's first used combine center.

More than three dozen used MF combines and a handful of Allis-Chalmers Gleaners are arrayed outside. The machines range from as-is clunkers to mint-condition restorations. Inside each cab is an 87-point appraisal sheet and repair record.

Inside the dealership is a rack of color-coded sheets describing each combine. Ownership history, usage, special features, repairs done and repairs needed are all listed, along with warranty and price. If a prospect wants to talk turkey, he has to catch a salesman.

"This was a pilot project," said Tony Colvin, special projects director for MCC. "If farmers thought it was stupid, we'd have gone on to something else. But the weekend we opened, 500 people showed up, and they loved it.

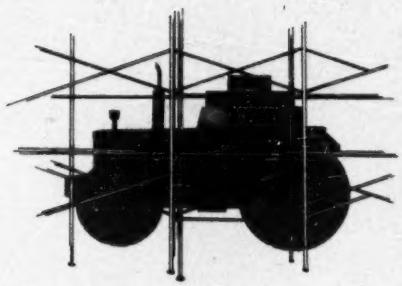
"It's a self-service supermarket concept," Colvin continued. "It's how real estate is sold, except we don't put a picture of the combine on the sheet.

"We'll be extending the concept, with a booklet for dealers and a used combine locator service. If a farmer wants something specific, we'll find it for him and get it down here if he's serious.

"We project three or four of these combine centers in each state in the grain belt. We have other projects that we'll be unfolding over a five-year period. The whole strategy is based on making it easy for customers to do business with us. It's the way things have got to go."

Dick Brown, MCC's vice-president, said used combine sales are a precursor to new sales. In normal times there are two used sales to one

(More...)



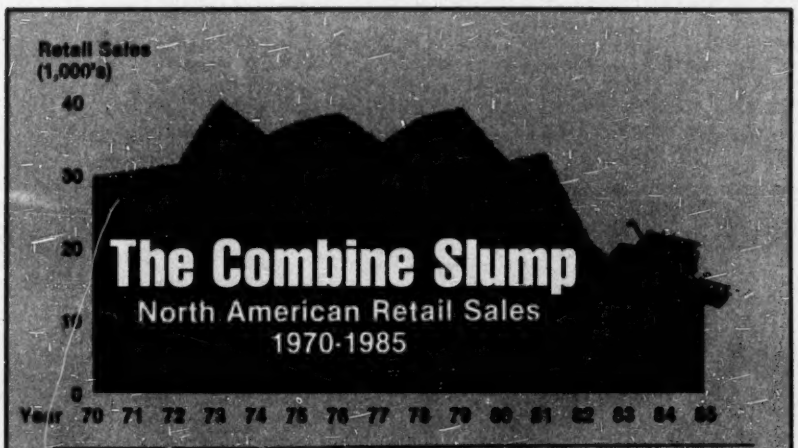
The Combine Business
(continued)

new, but recently it's been a four-to-one ratio. Until normalcy returns, if ever, the company must pay attention to used machines.

"The distribution channels must change," Brown said. "We're aggressively going to the customer. Take for example Caterpillar, where a good percentage of their business is on a bid basis with company involvement. We can't leave marketing to the traditional approach.

"The whole industry is undergoing a key structural change. We'll not limit ourselves to the Massey-Ferguson dealer network. Some green dealers are selling our rotary because they didn't have one and there's a certain demand for that product.

"The old rules have to change, and the market must rebound, simply because of replacement. The average age of a combine is 9.8 years in the U.S. and 8.2 years in Canada; those machines have to wear out. The new market should get back to a level of 21,000, but new sales depend on so many factors, it's hard to predict the year."



Retail Sales for Self-Propelled (S-P) and Pull-Type (P-T) Combines

Year	North America	U.S. (S-P & P-T)	Canadian S-P	Canadian P-T
1970	29,846	26,720	2,417	709
1971	31,164	27,269	2,901	994
1972	32,049	27,901	2,846	1,302
1973	40,763	35,082	3,930	1,751
1974	36,438	31,595	3,749	1,094
1975	38,196	32,084	4,144	1,968
1976	39,247	32,513	4,674	2,060
1977	35,058	28,821	4,526	2,251
1978	39,316	31,494	4,800	3,022
1979	40,326	32,246	5,030	3,050
1980	32,823	25,760	4,115	2,948
1981	34,366	26,830	5,055	2,481
1982	21,584	16,208	3,546	1,830
1983	17,072	12,751	2,920	1,401
1984	15,065	11,441	2,710	914
1985	12,481	8,402	2,838	1,241
TOTALS	495,794	407,117	60,201	29,016

Data from Farm & Industrial Equipment Institute (FIEI) and Canadian Farm & Industrial Equipment Institute (CFIEI).

Disrupted factories

The rotary combines MCC is offering to the green dealers, and others, started life as a White machine, but went to Massey during White's bankruptcy (U.S.) and receivership (Canada) travails last year.

Bob Terry, president of the revived White Farm Equipment within the expanding Allied Products Corp. group, was dealt out of the combine market, but he sees sales coming back to 20,000 units annually, and wants back in.

"The combine is still a market that's worth being in," said Terry, who projects a rebound in 1988 or 1989. "Right now, a combine is replaced because the farmer damages it, makes it eat rocks or severely damages the straw walkers."

Terry said White has discussed with Massey the private-label production of the former White 9320 and 9720 axials, but there's no deal yet. He also said White is testing four combines from another manufacturer, for possible introduction in 1987.

"We're concerned with cost, a product that lets us and the dealer make a profit at a competitive price. Beside cost, there's reliability, a product that's going to last. The grain loss monitors, electronics and such, are not what makes a guy buy," Terry said.

White is looking for a combine line, Terry said, because the company is serious about being a full-line manufacturer.

"Luckily we don't have to rush right now," he said. "There's a glut of used equipment, and banks and crop prices will have to get more favorable before sales pick up. We're finding out that combines can last a very long time, because they really were built pretty well. We may yet learn just how long they will last."

The disruptions in the White and Massey organizations have left a

consolidated manufacturing/engineering operation at Brantford, Ontario, where both companies had factories. MCC has moved its Toronto-area operations down to Brantford, mixing combine production in with balers, implements and related components.

Comparable moves of manufacturing sites have become the rule in the industry.

New Holland closed its Lexington, Neb., combine plant, moving operations to Grand Island, Neb.

After buying International Harvester's ag operations, J I Case closed the IH cotton picker plant at Memphis, Tenn., and moved production to the combine plant at East Moline, Ill., where corn heads, planters and cabs for combines and tractors are also made.

After Allis-Chalmers ag was bought by Deutz, the Gleaner plant at Independence, Mo., absorbed operations from a machining center in nearby North Kansas City, Mo., while retaining a Topeka, Kan., production center for headers.

Only John Deere hasn't heavily re-arranged its combine manufacturing, but has taken some extended plant layoffs along with others in the business.

"With the industry the way it's been, you fill the plants that do the job, and shut the others down," said Jerry Salzman, manager of combine promotion for Case-IH.

"The secret is to keep 'spikes' out of the production scheduling, avoid the layoffs and startups, then sell everything we build. We're interested in turnover of the product, but it's not easy for any of us in the combine business. It helps to put the combines in with other products, and have something else to build in the plant to keep things flowing smoothly."

Engineering the future

Case-IH recently introduced a new 1600 series of axial combines, and most recently unveiled a new model 1822 two-row cotton picker that demonstrates a growing trend—parts commonality among compatible lines of equipment.

"We used to have different grain and corn combines," said Salzman. "They had different transmissions. Now they share a lot of parts, and it's relatively easy to switch production between the two types, to respond to demand."

The model 1600 combine cab, transmission and final drives are also used for the Case-IH cotton pickers, which use the same guide axles and fuel tanks as the agricultural tractor line.

Pressurized misting tanks on the cotton pickers are the same as the liquid fertilizer tanks on the Early Riser Cyclo Air planters.

The Deutz-Allis Gleaners share many components between the conventional and rotary series.

When Massey absorbed the White axials, it got a bonus: Brown said the same engineer worked on both lines, resulting in a 30 per cent commonality, particularly in drivelines, hydraulics and other powered com-

(Continued on page 24)

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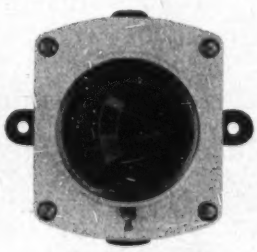
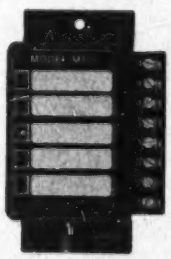


COOLANT LEVEL MONITORS



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1985 Retail Sales of Farm Wheel

State	Two-Wheel Drive Tractors										
	Under 20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-119	120-139
Alabama	699	547	353	420	248	146	147	106	7	38	46
Alaska	16	19	.....	.....	1	.....	.....	2	1	.....	.....
Arizona	201	537	56	61	16	24	64	38	9	26	18
Arkansas	889	736	313	496	262	303	101	64	3	25	15
California	1,151	1,194	246	232	309	340	713	263	38	131	55
Colorado	229	190	83	53	63	54	28	36	5	33	34
Connecticut	269	213	93	40	30	34	[illegible]	12	2	1	2
Delaware	93	70	18	12	13	9	[illegible]	13	4	13	6
Florida	1,236	918	453	464	254	289	382	336	5	55	36
Georgia	1,030	965	726	824	381	290	279	278	6	49	99
Hawaii	33	36	24	4	9	5	9	4	.....	.....	.....
Idaho	86	85	20	32	45	41	50	44	9	48	41
Illinois	731	368	97	143	228	174	165	169	12	113	81
Indiana	789	444	109	189	122	148	109	126	11	72	52
Iowa	196	139	32	76	48	106	189	115	34	116	122
Kansas	305	218	62	77	72	60	45	72	26	88	95
Kentucky	553	374	265	557	432	281	202	178	12	42	17
Louisiana	980	938	277	393	139	181	129	43	2	47	22
Maine	244	187	54	37	37	28	11	11	1	5	3
Maryland	856	479	157	176	126	83	58	66	6	39	28
Massachusetts	259	245	106	62	49	26	14	12	2	4	2
Michigan	950	539	172	181	232	208	168	133	14	77	47
Minnesota	202	106	47	50	57	105	96	141	24	164	118
Mississippi	488	581	286	400	207	240	192	171	2	19	25
Missouri	898	526	153	310	242	186	185	161	16	83	49
Montana	75	73	50	60	24	66	20	46	11	36	37
Nebraska	68	55	25	22	22	32	16	56	8	64	89
Nevada	34	26	5	2	11	6	6	9	.....	5	.....
New Hampshire	318	343	101	53	63	30	13	12	4	4	2
New Jersey	343	369	111	85	63	26	25	13	2	9	5
New Mexico	75	93	72	46	21	35	51	22	1	10	13
New York	1,100	783	254	257	310	228	209	262	21	102	55
North Carolina	1,164	829	583	824	289	226	151	165	8	39	36
North Dakota	69	54	14	11	18	24	10	36	12	91	85
Ohio	1,597	726	241	270	298	263	268	219	26	94	68
Oklahoma	548	417	129	191	111	102	111	108	5	74	58
Oregon	565	264	91	146	130	106	73	66	5	30	21
Pennsylvania	1,742	747	204	262	216	242	196	209	17	106	56
Rhode Island	37	31	7	9	6	4	1	1	.....	.....	.....
South Carolina	506	523	300	315	139	113	87	99	2	9	17
South Dakota	25	25	11	10	16	37	23	55	24	83	52
Tennessee	1,073	735	476	909	392	342	149	131	5	44	21
Texas	2,791	2,843	992	1,538	688	1,067	619	605	70	243	185
Utah	123	109	47	56	56	34	48	23	18	24	25
Vermont	156	122	29	37	40	41	66	48	10	15	8
Virginia	929	600	337	451	272	199	132	159	16	45	32
Washington	407	303	114	228	251	84	66	47	9	21	13
West Virginia	212	103	67	116	76	46	38	14	.....	8	3
Wisconsin	244	184	49	94	135	263	239	431	59	231	174
Wyoming	30	16	7	4	10	11	13	23	4	17	7
U.S. Government	.....	1	.....	.....	1	11	.....	.....	.....	.....	.....
Miscellaneous	6	48	.....	51	36	9	141	15	.....	.....	.....
TOTAL	**27,620**	**21,076**	**8,518**	**11,336**	**7,316**	**7,008**	**6,131**	**5,468**	**588**	**2,892**	**2,075**

DATA: Farm & Industrial Equipment Institute. Figures do not include garden tractors, motor tillers, or contractor's off-highway types. Report includes units marketed by these firms: Case International, Deere, Deutz, Deutz-Allis, Ford, Hesston, Kubota, Long, M-R-S-, Massey-Ferguson, SAME, Steiger, Versatile, White, and Yanmar. Sales reported as

Tractors by PTO Horsepower (In units)

130-139	140-159	160-179	180 & Over	Total 2-Wheel Drive	Four-Wheel Drive Tractors: Under 200	200-249	250 & Over	Total 4-Wheel Drive	Total All Farm Wheel Tractors	State
29	40	32	14	2,872	1	.....	1	2	2,874	Alabama
.....	.....	.....	.....	39	.....	.....	.....	.....	39	Alaska
31	44	80	35	1,240	1	6	22	29	1,269	Arizona
28	48	135	265	3,683	8	23	39	70	3,753	Arkansas
68	68	70	53	4,931	14	33	27	74	5,005	California
29	47	52	47	983	26	21	42	89	1,072	Colorado
.....	4	.....	2	715	1	.....	.....	1	716	Connecticut
6	4	9	5	286	4	3	.....	7	293	Delaware
15	62	22	16	4,543	17	10	3	30	4,573	Florida
28	165	73	49	5,242	3	1	1	5	5,247	Georgia
.....	.....	1	1	126	4	.....	5	9	135	Hawaii
35	58	88	104	786	39	19	25	83	869	Idaho
200	255	361	230	3,327	123	73	56	252	3,579	Illinois
114	168	201	135	2,789	47	31	35	113	2,902	Indiana
212	197	219	93	1,894	38	20	10	68	1,962	Iowa
106	191	184	138	1,739	79	100	69	248	1,987	Kansas
32	26	28	45	3,044	9	7	7	23	3,067	Kentucky
8	25	88	147	3,419	6	13	47	66	3,485	Louisiana
3	3	1	....	625	.....	.....	.....	.....	625	Maine
19	23	12	11	2,139	.....	2	1	3	2,142	Maryland
.....	1	1	.....	783	.....	.....	.....	.....	783	Massachusetts
48	105	70	31	2,975	34	25	15	74	3,049	Michigan
177	192	159	76	1,714	75	68	59	202	1,916	Minnesota
33	42	212	274	3,172	3	.....	17	20	3,192	Mississippi
92	86	97	75	3,159	13	7	15	35	3,194	Missouri
31	30	25	18	602	43	40	39	122	724	Montana
112	126	162	106	963	41	13	9	63	1,026	Nebraska
4	2	1	2	113	2	2	.....	4	117	Nevada
.....	3	.....	.....	946	.....	.....	.....	.....	946	New Hampshire
2	4	3	2	1,062	1	.....	.....	1	1,063	New Jersey
11	33	18	28	529	7	5	6	18	547	New Mexico
59	53	19	5	3,717	16	1	4	21	3,738	New York
33	61	35	35	4,478	4	.....	5	9	4,487	North Carolina
123	156	149	65	917	126	129	96	351	1,268	North Dakota
113	171	119	64	4,537	28	20	8	56	4,593	Ohio
45	158	100	46	2,203	50	69	48	167	2,370	Oklahoma
17	34	36	22	1,606	14	14	8	36	1,642	Oregon
38	31	19	10	4,095	6	5	5	16	4,111	Pennsylvania
1	.....	.....	.....	97	.....	.....	.....	.....	97	Rhode Island
9	18	9	25	2,171	2	2	1	5	2,176	South Carolina
156	108	141	43	809	79	31	48	158	967	South Dakota
48	59	80	58	4,522	2	4	10	16	4,538	Tennessee
184	477	522	428	13,252	40	65	87	192	13,444	Texas
15	23	18	6	625	.....	1	5	6	631	Utah
10	15	2	1	600	2	.....	.....	2	602	Vermont
24	33	19	5	3,253	2	2	1	5	3,258	Virginia
28	36	24	21	1,652	17	26	40	83	1,735	Washington
.....	2	.....	.....	685	.....	.....	.....	.....	685	West Virginia
152	193	125	42	2,615	44	8	8	60	2,675	Wisconsin
5	14	6	1	168	16	2	.....	18	186	Wyoming
.....	.....	.....	.....	13	.....	.....	.....	.....	13	U.S. Government
.....	.....	.....	.....	306	.....	.....	.....	.....	306	Miscellaneous
2,533	**3,694**	**3,827**	**2,879**	**112,761**	**1,087**	**901**	**924**	**2,912**	**115,673**	**TOTAL**

miscellaneous are retail sales which cannot be classified by state or as U.S. Government. They include sales and dispositions that do not go through usual marketing channels such as gifts to non-profit organizations, intra-plant or company transfers, etc.

Auction Prices

Asterisk beside price indicates highest bid offered on tractors that were not sold.

YODER & FREY, INC.
Archbold, Ohio
March 11, 1986

INTERNATIONAL HARVESTER TRACTORS

A, 1949 (Fair) 985
A, 1950 (Fair) 800*
A, ... 580
Cub Lo-Boy, 1968 (Good) 1775*
H, 1950 (Fair) 400
H, 1949 (Fair) 450
H, 1950 (Fair) 550
H, 1950 (Fair) 750
H, 1941 (Fair) 675
M, 1950 (Fair) 650*
M, 1951 (Fair) 550
M, 1948 ..... 600*
M, 1952 (Good) 650
Sup. M, 1954 (Fair) 725
Sup. M, 1952 (Good) 700*
2400-A, (Good) 2400*
C, 1949 (Fair) 1000*
100, cult., 1957 (Fair) 1900*
100, cult., 1955 (Rough) 1475*
300, 1956 (Rough) 650
350, 1956 (Rough) 2050*
400, 1956 (Fair) 900*
460, 1960 (Fair) 1600
460 diesel, 1960 (Fair) 1350*
460, 1961 (Rough) 1350*
460 diesel, 1958 (Rough) 825*
504 diesel, 1966 (Rough) 2600*
504, 1967 (Fair) 1900
504, 1968 (Rough) 1500
560, 1961 (Rough) 700
560 diesel, 1959 (Rough) 1400*
560, 1960 (Good) 2250
574, 1975 (Fair) 3400*
624, 1985 (Fair) 1650
656, 1967 (Fair) 3100*
666 diesel, 1973 (Good) 4900*
666, 1975 (Fair) 4900*
674, 1974 (Good) 6500
686, 1977 (Fair) 6500*
706, 1965 (Rough) 1400*
706, (Good) 3100
706, 1963 (Fair) 1750*
756, 1969 (Good) 3900
756, 1970 (Rough) 2250
758, 1970 (Fair) 2975
766 diesel, 1972 (Fair) 4250*
806, 1964 (Fair) 2800*
806 diesel, 1965 (Fair) 4000*
806, 1964 (Fair) 2750*
806 diesel, 1964 (Fair) 2800*
806 diesel, 1965 (Rough) 2200
806 diesel, 1963 (Fair) 2800*
806 diesel, 1965 (Good) 3100*
806, 1966 (Rough) 1800
806, 1965 (Rough) 2250*
826 diesel, 1970 (Good) 4000*
826 diesel, 1970 (Good) 4100*
856 diesel, 1967 (Fair) 4150
856, 1970 (Fair) 4850
856, 1969 (Fair) 4300
856 diesel, 1970 (Fair) 4450
856 diesel, 1967 (Fair) 4200*
856 diesel, 1970 (Fair) 4100*
966, 1976 (Good) 9100*
966 diesel, 1974 (Fair) 4800*
966, 1974 (Fair) 4900*
966, 1973 (Good) 6800*
966 diesel, 1974 (Good) 6250
986 diesel, 1978 (Good) 9000*
986, 1981 (Excellent) 11,500*
986, 1978 (Fair) 7300*
986, 1977 (Fair) 8100*
1066 diesel, 1972 (Good) 6400*
1066 diesel, 1974 (Good) 6500
1066 diesel, 1974 (Good) 6600
1066 diesel, 1975 (Fair) 5100*
1066 diesel, 1974 (Good) 6600*
1066, 1972 (Fair) 5750*
1066 diesel, 1977 (Good) 12,500*
1066 diesel, 1979 11,100
1066 diesel, 1976 (Fair) 9300*
1206 diesel, 1967 (Rough) 3700*
1206, 1964 (Fair) 3600*
1206, 1965 (Fair) 2900*
1206, 1966 (Fair) 3700*
1206, 1966 (Fair) 3350
1256, 1968 (Fair) 4500*
1256 diesel, 1970 (Fair) 4800*
1456 diesel 6000
1466, 1974 (Fair) 6250*
1466 diesel, 1973 (Good) 5800*
1466 diesel, 1974 (Good) 5800*
1466, 1974 (Fair) 6000
1466 diesel, 1974 (Good) 6000*
1466, 1974 (Fair) 5250*
1466, 1973 (Fair) 6100*
1466 diesel, 1973 (Rough) 4100*
1566 diesel, 1974 (Good) 7100
1566, ... 8000
1586, 1979 (Good) 9500*
1586, 1978 (Fair) 6750*
1586, 1981 (Good) 10,250*
1566 diesel, 1978 (Good) 9400*
3588, 1979 (Good) 11,750*

DEUTZ TRACTORS

DX160 diesel, (Good) 15,000
D6006 diesel, (Fair) 4600*
D5006 diesel, (Fair) 3500*
D13006 diesel, 4WD, (Fair) 7000*

STEIGER TRACTOR

Wildcat, 1977 (Fair) 8200*

JOHN DEERE TRACTORS

730, 1959 (Rough) 1700*
730 diesel, 1958 (Fair) 1850
50, 1955 (Fair) 1150
70 diesel, 1955 (Fair) 900*
70 diesel, 1954 (Good) 1050*
60, 1954 (Fair) 900*
60, Idr., 1955 (Fair) 1100*
60, Idr., 1954 (Fair) 1275
60, 1964 (Fair) 800*
60, 1955 (Rough) 625
60, 1957 (Fair) 850
530, 1958 (Fair) 1500*
430, Idr., 1960 (Rough) 1900
630, 1958 (Fair) 1150*
720 diesel, 1956 (Fair) 1900
830 diesel, 1959 (Rough) 2500
2010, 1971 (Good) 3000
2030 diesel, Idr., 1974 (Good) 5300*
2350 diesel, (New) 10,950
2440 diesel, 1978 (Rough) 5750*

(More...)

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Bale is formed without belts or rollers; using less horsepower while increasing productivity

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$12.50 ea.

- 4 bolt mount
- Steel frame base, molded vinyl cover, super soft cushion.
- 16 3/4" wide - 1/2" deep - 6" high back

TWISTED CHISEL SPIKES

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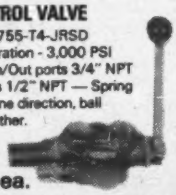
$3.90

- Heat treated for extra strength and longer wear life.
- Size 3/8" thick, 3" wide, 22" long
- 4 hole on 2 1/4" centers - for #3 head 1/2" dia. plow bolt.

BRAND DIRECTIONAL CONTROL VALVE

- Model AO755-T4-JRSD
- 4 way operation - 3,000 PSI
- 18 GPM In/Out ports 3/4" NPT Work ports 1/2" NPT — Spring centered one direction, ball detent in other.



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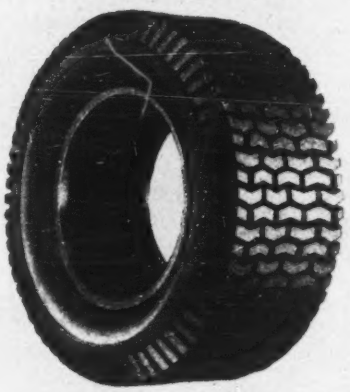

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Auctions *(continued)*

3010 diesel, 1962 (Fair) 2800*
3010 diesel, 1962 (Fair) 2950
3010 diesel, 1961 (Good) 2950*
3020 diesel, 1969 (Fair) 3000
3020 diesel, 1968 (Good) 4850
4010 diesel, 1962 (Fair) 3500*
4020 diesel, 1966 (Fair) 4850*
4020 diesel, 1969 (Rough) 4500*
4020 diesel, 1983 (Rough) 4350
4020 diesel, 1972 (Good) 6200*
4020, 1966 (Rough) 2600
4020 diesel, 1969 (Good) 5950
4020 diesel, 1972 (Good) 6750*
4020 diesel, 1967 (Good) 5450
4020 diesel, 1972 (Fair) 5950*
4020 diesel, 1966 (Fair) 5000
4030 diesel, 1974 (Good) 5800*
4040 diesel, 1980 (Good) 11,600
4230 diesel, 1975 (Fair) 9250*
4230 diesel, 1974 (Good) 8750*
4230 diesel, 1976 (Fair) 7900*
4230 diesel, 1972 (Fair) 6000*
4320 diesel, 1973 (Good) 6500*
4320 diesel, 1976 (Good) 8900
4430 diesel, 1977 (Fair) 9100*
4430 diesel, 4WD, 1975 (Rough) .. 10,500*
4430 diesel, 1975 (Good) 10,000
4430 diesel, 1976 (Good) 9500*
4430 diesel, 1977 (Good) 8500*
4620 diesel, 1972 (Fair) 4200*
4630 diesel, 1977 (Fair) 10,500*
4630 diesel, 1978 (Good) 10,100*

CASE TRACTORS

430, 1966 (Rough) 1500
580 diesel, 1970 (Fair) 4100*
930 diesel, 1966 (Rough) 3200*
930 diesel, 1966 (Fair) 1700
930 diesel, 1965 (Fair) 1900
970 diesel, ldr., 1974 (Rough) 6500*
1070 diesel, 1965 (Fair) 3000
1070 diesel, 1975 (Fair) 5800
990 diesel, 1960 (Fair) 1950
1200 diesel, 1968 (Fair) 2900
2290 diesel, 1980 (Fair) 10,000*

WHITE TRACTORS

2-75 diesel, 4WD 1984 (Good) 14,050
2-150 diesel, 1976 (Excellent) 8200*
2-150 diesel, 1977 (Good) 7650*

MINNEAPOLIS-MOLINE TRACTORS

U-302 LP, 1966 (Fair) 2100*
M-670, 1968 (Fair) 1650

FORD TRACTORS

Jub., ldr., 1954 (Rough) 2200*
Jub., 1954 (Rough) 1775
8N, 1945 (Rough) 1025*
8N, 1947 (Rough) 825
8N, 1952 (Good) 1400*
8N, 1951 (Rough) 1050*
8N, 1952 (Fair) 1400
9N, 1943 (Rough) 825
9N, 1944 (Fair) 875*
9N, 1945 (Rough) 775
800, 1957 (Good) 1900
860, 1958 (Good) 2400*
901 diesel, 1958 (Good) 2100*
861, 1958 (Rough) 2475
4000 diesel, ldr., 1971 (Fair) 5000
4000 diesel, ldr., 1972 (Rough) 1500
4000 diesel, ldr., 1972 (Rough) 1550
5000, 1965 (Fair) 4500*
5000 diesel, 1972 (Good) 4500*
7000 diesel, 1974 (Fair) 5000*
8600 diesel, 1974 (Rough) 5800*
9600 diesel, 1975 (Rough) 4100*
9600 diesel, 1974 (Fair) 6500
9700 diesel, 4WD, (Rough) 10,000
8600 diesel, ldr., 1976 (Good) 6400
8700 diesel, 1979 (Good) 8900

OLIVER TRACTORS

88 diesel, 1955 (Rough) 850*
1255 diesel, ldr., (Fair) 4050*
1600, 1961 (Fair) 2000
1650 diesel, 1965 (Fair) 2550
1650 diesel, 1967 (Rough) 1700
1650 diesel, ldr., 1966 (Fair) 4900
1650, 1965 (Rough) 1700*
1655 diesel, 1973 (Fair) 2900*
1800 diesel, 1964 (Rough) 1825
1800 diesel, 1962 (Fair) 2450
1800, 1962 (Fair) 1800
1850 diesel, 1965 (Fair) 4200
1850 diesel, 1967 (Rough) 1600*
1850 diesel, 1965 (Good) 2850*
1850 diesel, 1966 (Fair) 2400
1855 diesel, 1973 (Fair) 4000*
1855 diesel, 1972 (Fair) 4600*
1855 diesel, 1972 (Fair) 2400*
2255 diesel, 1973 (Good) 6700*

FERGUSON & MASSEY-FERGUSON

TO-20, 1954 (Fair) 1025*
TO-20, 1942 (Rough) 900*
MH-40, 1959 (Fair) 1800*
35 diesel, 1960 (Fair) 1950
35 ldr., 1954 (Fair) 2000*
35, 1959 (Fair) 1700*
35, 1961 (Fair) 1800*
85, 1967 (Fair) 1200
90, 1961 (Fair) 1300
135, 1970 (Good) 3200
165 diesel, 1967 (Fair) 2800*
165, 1969 (Rough) 2550
240 diesel, (New) 6900*
255 diesel, 1980 (Good) 5250
265 diesel, 1975 (Fair) 5150*
285 diesel, 1979 (Fair) 5000*
285 diesel, 1977 (Fair) 5250*
1100 diesel, 1970 (Rough) 2400*
1100, 1969 (Rough) 1650
1130 diesel, 1969 (Rough) 2900*
1155 diesel, (Rough) 2800*
1805 diesel, 1974 (Good) 6125
2775 diesel, 1978 (Fair) 8400

ALLIS-CHALMERS TRACTORS

C, 1951 (Rough) 1025*
D-15, 1966 (Fair) 1825
D-17, plow, 1963 (Fair) 1600*
D-17 diesel, plow, 1961 (Fair) 2050*
D-19, 1966 (Good) 2000*
190XT diesel, 1967 (Fair) 3600*
190XT diesel, 1967 (Rough) 1450
200 diesel, 1972 (Fair) 4375*
200 diesel, 1971 (Fair) 4900
6060 diesel, (New) 15,500*
7000 diesel, 1977 (Fair) 5750*
7060 diesel, 1976 (Good) 6100*
7080 diesel, 1976 (Fair) 7000*

JONES FARM EQUIPMENT CO.
Dothan, Alabama
Feb. 25 & March 11, 1986

ALLIS-CHALMERS TRACTORS

5020, ldr., (Good) 3050
180 diesel, 1969 (Fair) 2950

DAVID BROWN TRACTOR

995, 1970 (Good) 2000

CASE TRACTORS

1212, 1969 (Fair) 1500*
1070 diesel, can, 1971 (Rough) 2400
970, 1978 (Good) 4150
580 diesel, 1974 (Rough) 1500*

FERGUSON & MASSEY-FERGUSON

1155, 1974 (Fair) 4200*
1105, 1978 (Fair) 3175
1085, 1977 (Good) 4100*
1085, 1975 (Good) 4950*
1085 diesel, 1972 (Fair) 3300*
282, 1980 (Excellent) 7250
230, 1976 (Good) 3900
180, diesel, 1981 (Fair) 2350
175 diesel, 1973 (Fair) 2500*
175, 1973 (Rough) 1800
175 diesel, (Good) 2450*

185, 1974 (Fair)	2600*
185, 1972 (Fair)	3000
185, 1970 (Fair)	1800
185 diesel, 1968 (Good)	2950
148, 1969 (Fair)	1800
135 diesel, 1974 (Good)	2750*
135, 1973 (Fair)	2000*
135, 1972 (Good)	3450*
135, 1970 (Rough)	1750
90, 1962 (Good)	3500*
65, 1962 (Fair)	1900
35, 1963 (Fair)	1450*
35, 1963 (Fair)	1300
35, 1963 (Good)	3225
35, 1961 (Good)	1800*
35 diesel, 1961 (Good)	2200
35, diesel, 1960 (Fair)	1600*
30, 1963 (Rough)	1000

FORD TRACTORS

8600 diesel, 1971 (Fair)	4800
8600 diesel, 1968 (Fair)	3500
7600 diesel, 1979 (Good)	5250
7600, 1976 (Fair)	3950
7000, (Fair)	3200*
6000, 1963 (Rough)	1675*
5000 diesel, 1981 (Good)	4500*
5000, 1980 (Fair)	3600*
5000 diesel, 1980 (Fair)	4250*
5000, 1971 (Rough)	2950
5000 diesel, 1969 (Fair)	3550*
5000 diesel, 1967 (Rough)	1100
5000, (Good)	4100*
5000, (Fair)	3600*
5000, (Fair)	2500*
4000 diesel, 1980 (Good)	5000
4000, 1977 (Fair)	2150
4000, 1974 (Fair)	2700
4000 diesel, 1970 (Good)	3300
4000 diesel, 1970 (Good)	3200
4000 diesel, 1967 (Good)	3750
4000, 1963 (Good)	2950
4000, 1963 (Rough)	1675
3000, 1969 (Fair)	3300
3000, 1967 (Fair)	2500
3000, 1966 (Good)	5200
3000 diesel, 1968 (Fair)	2800*
3000 diesel, 1965 (Fair)	2900
3000 diesel, (Good)	3000
3000,(Good)	2850
2600 diesel, 1978 (Good)	3500*
2000, 1965 (Good)	2200
2000, 1964 (Good)	2800
1910, 1980 (Good)	6300*
641, 1961 (Fair)	2350*
640, 1958 (Fair)	2000
601, 1959 (Good)	2450
9N, 1940 (Fair)	1300
9N, 1943 (Fair)	1100
8N, 1952 (Good)	1550
8N, 1950 (Good)	1950
8N, 1949 (Good)	1700
8N, 1948 (Good)	1625
8N, 1948 (Fair)	1350
8N, 1948 (Fair)	1000
NAA, 1954 (Good)	2400
Jubilee, Bushhog, (Fair)	1300

INTERNATIONAL HARVESTER

2400, (Fair)	1325
886, 1978 (Fair)	3800*
784 diesel, cab, 1980 (Good)	5100*
784 diesel, cab, 1979 (Good)	6300*
784 diesel, cab, 1979 (Good)	5000*
784 diesel, 1978 (Good)	4700*
706 diesel, 1965 (Rough)	1000
674 diesel, 1979 (Fair)	5100*
674 diesel, 1979 (Good)	3500*
674 diesel, 1977 (Fair)	4300*
674 diesel, 1976 (Fair)	3000*
674 diesel, 1975 (Good)	2600*
574 diesel, 1978 (Fair)	3600*
574 diesel, 1977 (Good)	4000*
574 diesel, 1977 (Fair)	3250*
574 diesel, 1974 (Fair)	4100*
574 diesel, can., 1973 (Fair)	3200*
539, (Good)	5000*
484 diesel, 1978 (Fair)	4500*
454 diesel, 1972 (Good)	4000*
444, (Rough)	1700
434, 1965 (Rough)	1050
Cub, (Fair)	1200

JOHN DEERE TRACTORS

4640, 1979 (Fair)	6950*
4630 diesel, 1977 (Good)	5500*
4630, 1976 (Fair)	5600
4630 diesel, 1974 (Fair)	4500*
4630, 1974 (Fair)	4050
4230, 1978 (Fair)	3550*
4030 diesel, 1974 (Good)	4300
4020 diesel, 1970 (Good)	5600*
4020 diesel, 1970 (Fair)	2300*
4020, 1969 (Good)	4700*
4020, can., 1969 (Fair)	2900
3130 diesel, 1974 (Fair)	5400*
3010 diesel, 1962 (Fair)	1900*
2640, 1980 (Good)	5150
2440, (Good)	4400
2130 diesel, 1975 (Fair)	6100*
2130 diesel, 1975 (Good)	6000*
2130 diesel, 1975 (Good)	5000
2130 diesel, 1975 (Good)	5000*
2130 diesel, cab, 1978 (Good)	6100
2120, 1968 (Fair)	1550*
2030 diesel, 1974 (Fair)	5000*
2030 diesel, 1974 (Fair)	4050
2030 diesel, 1974 (Good)	4000*
2030 diesel, 1973 (Good)	4100
2030 diesel, 1972 (Good)	4500*
2020, 1970 (Fair)	2350
2010, 1965 (Fair)	1350
1120 diesel, 1973 (Fair)	2700*

LONG TRACTORS

1310, (Fair)	2250
384, (Good)	1550

OLIVER TRACTORS

1550, ldr., 1969 (Fair)	3500
550, 1962 (Fair)	1500
550, (Fair)	1800

WHITE TRACTOR

2-105, 1977 (Good)	4800*

MEASURE RPM INSTANTLY
Pioneer Model DT36M Digital
TACHOMETER
with memory

Continous Digital Readout
60 to 50,000 RPM
Visible Light Beam makes aiming easy
No Wires or Mechanical Connections Required
Memory stores last reading

A highly accurate photoelectric digital display tachometer incorporating Pioneer's own patented* circuitry. **Accuracy: ±1 RPM over entire range • Large 5 Digit LCD Display • Crystal Controlled Time Base for stability • Battery operated using 2-1.5 V "AA" batteries 1-9V alkaline battery • No calibration required**

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- Continous RPM Readings from 1 to 25,000
- Continous Surface Speed Readings in FPM, YPM and MPM with proper adapter
- Liquid Crystal Display
- Easy, Battery Operation
- Low Battery Indicator
- 2 Minute Memory

Accuracy to ±2 RPM at maximum speed. The Pioneer Model DT-25 comes complete with 2 cone adaptors, 1 funnel adaptor, 6" FPM wheel and carrying case.

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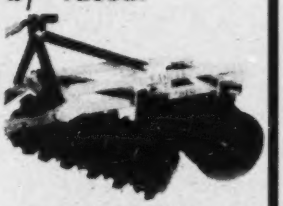
ESTATE Line by Vassar

ESTATE OFFSET DISC
Tubular and angle iron main frame. Adjustable beams for various soil conditions. Square axle (1 1/8") mounted on triple sealed ball bearings. Designed for 12 to 18 horsepower tractors.



ESTATE UTILITY BLADE
Available in 48" or 60" width, 360° rotation. 7 forward angular positions — 3 reverse. Removable 3/8 x 3" HC steel cutting edge.

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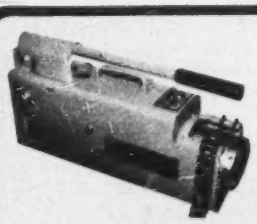

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(SINGLE OR DOUBLE PUSH PINS)

• Seconds to Break Chain • Portable • Rotate To Use • No Changing of Pins •
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ponents.

This simplifies integrating the two machinery lines into a single factory, and provides some cost savings by increasing volumes on individual parts.

There's a common thrust among all manufacturers—lower the retail price while maintaining factory and dealer profitability.

Tom Stadtmueller, D-A Gleaner's marketing manager, commented that the price of new machinery is a key to the market because bankers aren't allowing a purchase unless it's absolutely necessary.

"When the rotaries first came out (in the mid-70's) there was a demand for new technology. Now it's all cash flow." he said. "The custom cutter has to buy new machinery, for the reliability, while the individual farmer has to cost-justify a purchase to himself or his banker.

"We have to add value to the buyer, and increased productivity is value. That's where the engineering changes are headed."

By way of example, Gleaner recently renamed its rotary line the R series, rather than N series; major changes were a new straw spreader system, a high-reach bin unloader and a more comfortable operator seat.

The spreader prevents windrowing, making post-harvest tillage easier; the unloader permits use of taller trucks and trailers and eases unloading on-the-go; the seat reduces fatigue.

Powered feed reversers are becoming standard equipment on many models throughout the industry. Controls are being repositioned and color-coded for convenience. Electronic monitors are becoming routine; there's even automatic steering standard on the new Commandor corn models from Claas.

There's an irony in these technical improvements: the more productive the machines get, the fewer machines needed to do the job. The trend to bigger machines has also hurt sales volumes.

"Harvesting capacity has not dropped as fast as unit volume," noted Barrie L. Smith, combine manager in Deere & Co.'s product planning and marketing department. "Our biggest combine of today has two and a half times the capacity of the largest machine from 1964.

"There's better utilization, with a farmer who owns a combine renting it out or doing custom work. On the technical side there's much greater reliability, the farmer getting through the entire harvest without a breakdown. Across the industry, those factors are reasons for a change in the market."

Smith was reluctant to predict when the combine market might rebound or how large it will get because of the many unknowable variables, but commented on how farming practices are likely to affect the industry.

"The question for the future is how we address farming as a

GOOD NEWS!

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Finally there is a rotary bar that will out-last the harvest! Made from solid chrome-alloy they'll out-last conventional bars 2 to 1. We guarantee them against wearing out for one (1) year or 500 hours.

Bars shown: 590 hours
1440-1470 75,000 bushels of peas, wheat & barley
Owner: Merle Colyar—Endicott, WA

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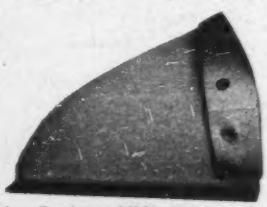
PRICE COMPETITIVE WITH GOOD MARGINS



Impellor shown: 350 hours
1440-1470 50,000 bushels of peas, lentils, grass seed, wheat and barley
Owner: Rich Baden—Spangle, WA

More Good News! Chrome-alloy impellor blades welded to backing plates will out-last original equipment impellor blades 3 to 4 times. Save time and money, and improve combine performance with these superior impellor blades!

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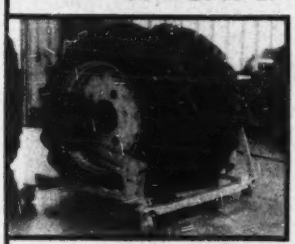

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• Safety • Versatility • Time

Model DT-25—DT-27 • Dual or single tires • 6" casters • telescoping legs • adjustable tire support • 8,000 lb. capacity.
Model T-21 • single tires • 6" casters • with or without axle housing • 6,000 lb. capacity.
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DT-27 shown with scissor adaptor to support axle housing.

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manufacturing operation," Smith said. "Look at a factory, the way things are planned for getting materials in, organizing work flow and getting product out...farming is really in the same realm.

"A major question is how the combine affects whatever comes after it. Ridge farming, for example, requires specific wheel spacing to avoid damaging the ridges. The technology is both a problem and an opportunity as farmers look to the technology of what they do, worrying about soil compaction, controlled traffic lanes and the like.

"We need to design toward flexibility, make machines that can harvest whatever crop the market-oriented farmer needs to plant to stay in touch with demand," Smith said. "You can't have a dedicated corn combine that will harvest nothing else."

A world industry

The last five years of slumping sales and corporate consolidations have made the North American farm machinery business an international operation, and combines are part of that movement.

Traditionally, combines were considered non-exportable between continents, except in limited numbers.

A monster Class 7 machine meant for the U.S. wheat belt simply wouldn't fit on European highways, and wasn't meant for the high density cropping practices used across the Atlantic. South Americans and Australians also had their own unique machinery needs.

But the slump in North American sales has forced some re-thinking of those notions.

Case-IH closed the old IH combine plant at Angiers, France, and supplies that market out of East Moline. Deere recently introduced here the German-built model 4425, designed for four-row harvesting. Claas imports all its machines from Germany. Massey brings in small test-plot combines from Denmark.

There's general agreement in the industry that it's impractical to ship large quantities of combines across the world's various oceans because the freight is based on volume and the machines have a lot of empty air space.

But all the companies talk about the importation of technology or major sub-assemblies to produce a competitive edge when the domestic combine market rebounds.

"We have a worldwide technical base to draw on, and we'll take advantage of that," said Brown of Massey.

Deutz-Allis acknowledges it is testing Deutz air-cooled engines for the Gleaners, and can tap combine ideas from parent KHD. New Holland has its Clayson line from Belgium, and is now part of the Ford network, which freely uses worldwide technology in its product lines. □

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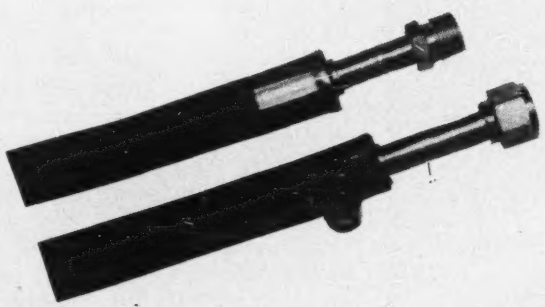
Freon Hose and Fittings



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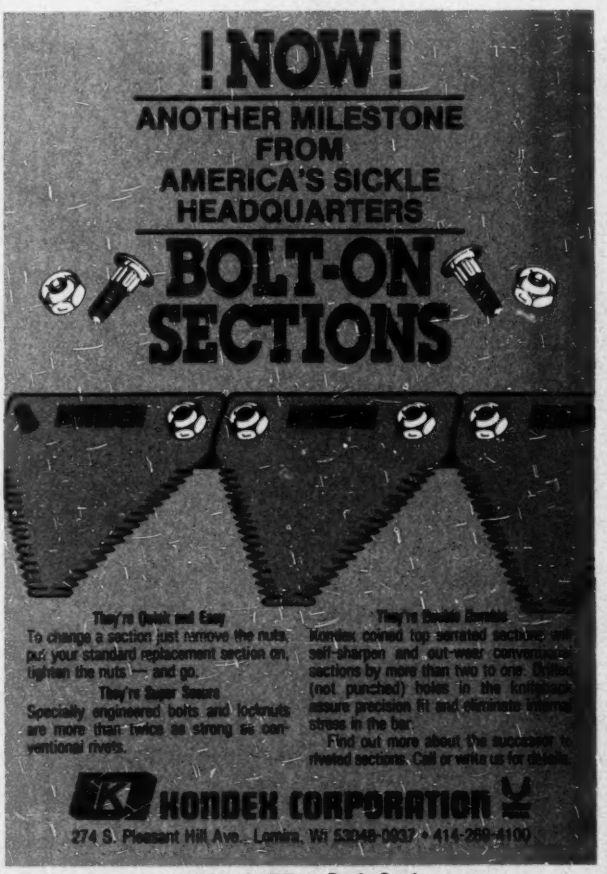
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